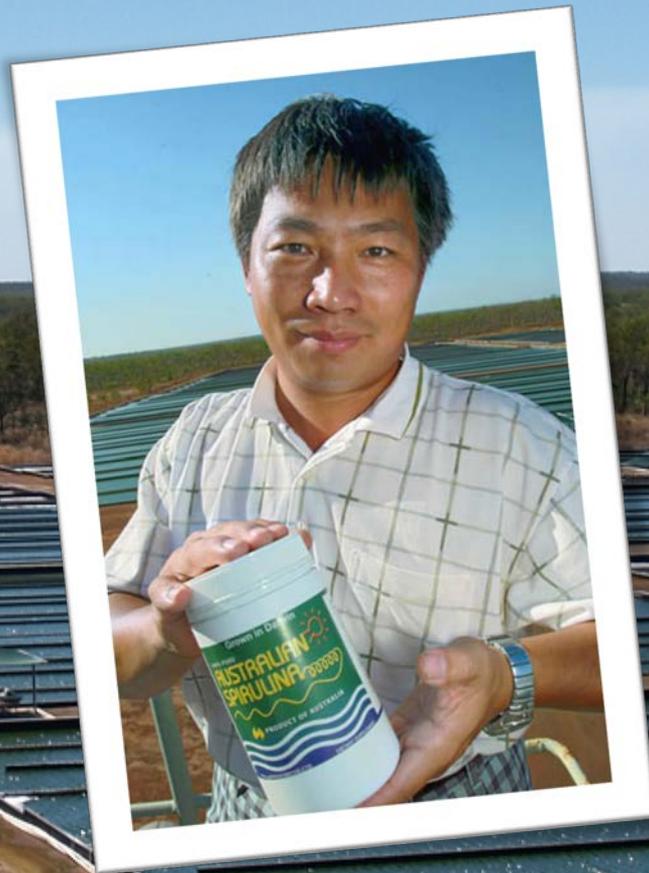


Australian Spirulina



TAAU Australia

Table of Contents

1. About Us
2. What is Spirulina?
3. What are the Health Benefits?
4. Tips for First Time Users
5. Good vs Poor Quality Spirulina
6. Organic Claims
7. Our Spirulina VS The World

About Us

Australian Spirulina and TAAU Australia

TAAU Australia Pty Ltd was established in 1996 and is the only company licensed and patented (with a 20 year Australian Patent) to commercially grow the health food Spirulina in Darwin in the Northern Territory of Australia. Australian Spirulina is 100% local and 100% Australian made, not imported.

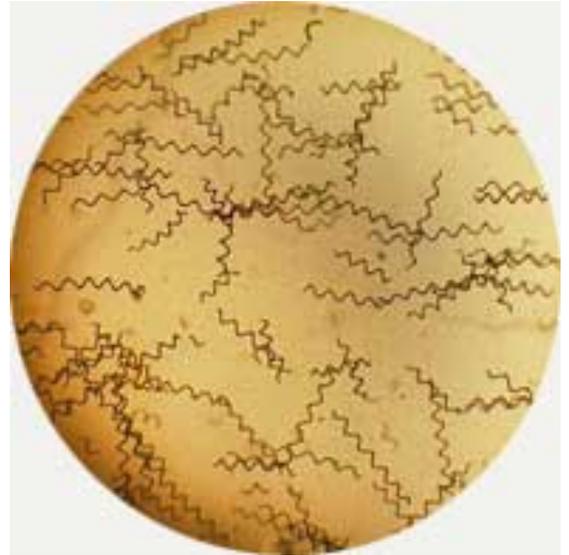
With more than 20 years of experience growing Spirulina, our team is made up of leading experts in this field.



TAAU Australia has been the recipient of many awards (pictured above) such as winner of 2003 Australia NT Export awards "Emerging Export Award", and both the 2006 Export awards for "NTICIN Manufacturers Industry Award" and "Agribusiness Award".

What is Spirulina?

Spirulina is 100% natural and a highly nutritious micro salt water plant. It was discovered in South America and Africa in natural alkaline lakes. This spiral shaped algae is an extremely rich food source. For a centuries this algae has constituted a significant part of the diet of many communities. Since the 1970's, Spirulina has been well known and widely used as a dietary supplement in some countries.



Spirulina contains rich vegetable protein (60~ 63 %, 3~4 times higher than fish or beef), multi Vitamins (Vitamin B 12 is 3~4 times higher than animal liver), which is particularly lacking in a vegetarian diet. It contains a wide range of minerals (including Iron, Potassium, Magnesium Sodium, Phosphorus, Calcium etc.), a high volume of Beta- carotene which protects cells (5 time more than carrots, 40 time more than spinach), high volumes of gamma-Linolein acid (which can reduce cholesterol and prevent heart disease). Furthermore, Spirulina contains Phycocyanin which can only be found in Spirulina.

Due to its myriad of benefits and nutritional value, even NASA have chosen to use it as a food source for astronauts in space, and even plan to grow and harvest it in space stations in the near future.

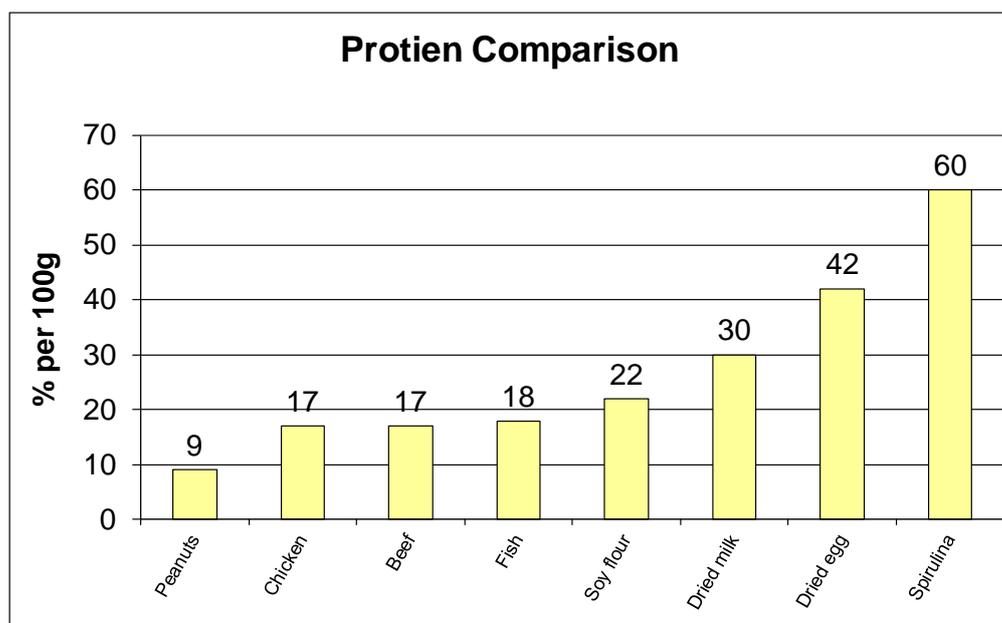
What are the Health Benefits?

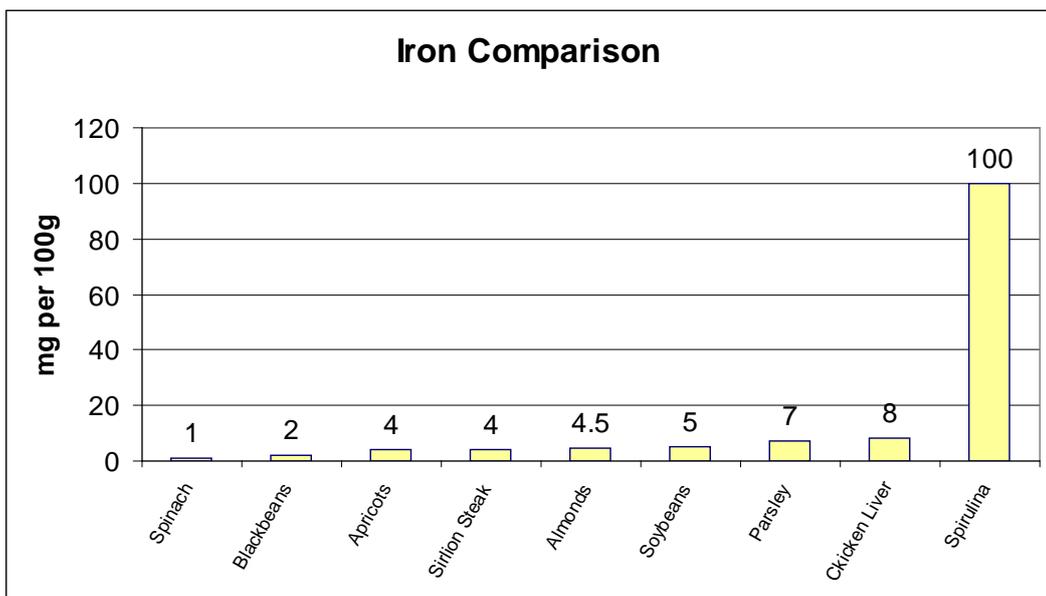
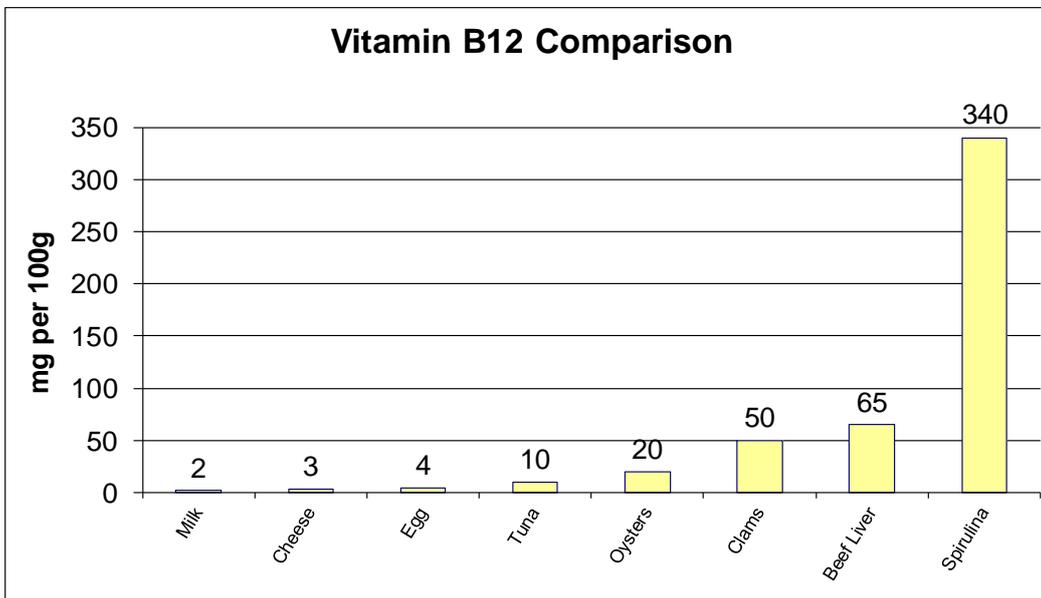
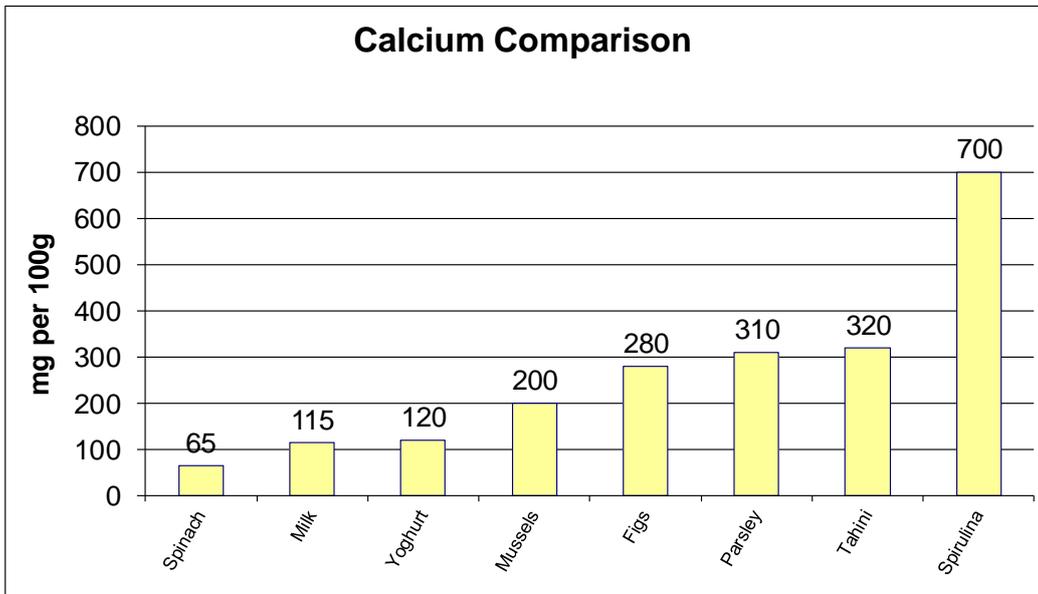
Richest nutrient source

Spirulina is the richest nutrient and complete food source found in the world. It contains over 100 nutrients, more than any other plant, grain or herb. Today Spirulina is widely used as a food supplement to maintain health, boost energy and reduce weight.

Spirulina contains 60-63 % protein, up to 13 % of essence minerals like Calcium, Magnesium, Potassium, Phosphorus, Iron, and Zinc as well as complete vitamin B groups and many important anti-oxidants (which protect cells). The anti-oxidant Phycocyanin can only be found in Spirulina. It is the richest natural source of Vitamin E and beta-carotene.

Here is quick breakdown of how it compares as a source of particular nutrients compared to some other foods:





For a more consolidated breakdown, please see this nutrition label which can be found on the back of our product:

<i>Nutrition Information</i>		
	Per 100g	Per serve (2.5g)
Energy	1504kj	37.6kj
Protein	62g	1.55g
Fat (Mojonnier extraction)	4.1g	0.1025g
Carbohydrates (total)	17.5g	0.4375g
Minerals		
Calcium	120mg	3mg
Copper	0.077mg	0.002mg
Iron	37mg	0.925mg
Magnesium	330mg	8.25mg
Manganese	1.9mg	0.0475mg
Phosphorus	1300mg	32.5mg
Potassium	2600mg	65mg
Sodium	2200mg	55mg
Zinc	0.53mg	0.01325mg
Vitamins		
Thiamin (B1)	0.4mg	0.01mg
Niacin (B3)	1.5mg	0.0375mg
Pyridoxine (B6)	0.08mg	0.002mg
Cobalamin (B12)	659.1ug	16.478ug
Beta- Carotene	140000ug	3500ug
Total Carotenoids	170mg	4.25mg

Energy booster

Spirulina being naturally green is beneficial to our health as it contains a large amount of the chlorophyll and Phycocyanin. Chlorophyll absorbs the energy from sunlight to create carbohydrates to boost your energy through the day.

Vegetarian's best nutrient supplement

Vegetarians cannot eat animal products and commonly lack Vitamin 12 (from the animal liver), Iron (from red meat or spinach) and Amino Acids. Spirulina is a natural organic product and vegetarians taking Spirulina daily will fill these gaps.

Concentrated protein and essential fatty acid

Amino Acids are important to our body. They assist muscle growth, immunity, and the production of enzymes and hormones. Spirulina can provide more than 60~63 percent of protein including a complete source of 8 essential amino acids, plus 10 other non-essential amino acids, which are commonly lacking in vegetarian diets.

Spirulina is also one of the few sources of food that contains omega 3 and 6 fatty acids in the linolenin, gamma linolenin acid (GLA). These fatty acids are essential in keeping a woman's body healthy.

Weight reduction

Although Spirulina cannot directly reduce your weight, it contains the nutrients our bodies need and is quickly assimilated.

Adjust your body's PH value

The ideal healthy human body's PH level should remain on low alkaline about PH 7.35~7.45. Modern day people indulge in too much acidic food like soft drinks, meat, cheese, eggs, and ham. These cause our body to become acidic (PH < 7). Many medical research reports have proven that acidic bodies will have more chance of getting diseases or cancer. Regular use of Spirulina can help keep your body alkaline will help you reduce this risk and is the ideal food supplement for the weight reducer.

Ideal supplement food for pregnant women and infants

While women are pregnant, the baby in their body will rapidly absorb nutrients. If the pregnant mum does not get sufficient nutrients from food while her baby is growing, she will become depleted of these nutrients herself.

Spirulina easily provides the richest and most complete source of nutrients for the pregnant women and thereby prevents nutrient deficiency after the baby is born.

Natural Nutrient source

Most multi vitamin products are synthetic (artificial). No other products can provide natural nutrients and vitamins like Spirulina. Spirulina is a totally natural non synthetic product.

Tips for First Time Users

Check the product when you receive it:

When you have received your *Spirulina*, please double check to ensure that the product is sealed and unopened. After you open the packaging, please check the *Spirulina powder* or *tablets* for any unusual smell and colour.

Please note, ***Spirulina* as a natural grown product, the colour, smell and taste may vary slightly from batch to batch.** This will depend on growing weather conditions.

How to store:

Keep in a cool and dry area, Avoid moisture, heat or direct sunlight. Can be stored at room temperature or refrigerated.

How to take:

a. We suggest taking *Spirulina* on a regular basis,

Adult : Tablet: **5 ~ 10 tablets (2.5g ~ 5g)** a day; **Powder: 2 ~ 3 teaspoon** a day

Children under 12 years , Tablet: **3 ~ 5 tablets (1.5g ~ 2.5g)** a day; **Powder: 1 ~ 2 teaspoon** a day.

b. For best results, we suggest taking with water only. ***Avoid consuming juice, coffee, tea, soft drink or alcohol within 30 minutes of taking Spirulina.***

c. *Spirulina* is a supplement, not medicine, so it ***does not matter if you take it before or after meals.***

d. **Avoid taking before sleeping**, as too much energy may contribute to difficulty sleeping well.

e. **Drink extra 500ml of water per day.** While you are taking *Spirulina*, your body needs extra water to help digest the *Spirulina*. ***Insufficient water intake may result in hard defecation or constipation.***

Use as a food ingredient or juice mix:

For best results, we strongly suggest ***taking with water only.***

- a. If you need to mix *Spirulina* in a **salad, juice** or **smoothie**, please consume as soon as possible for best results.
- b. **Avoid cooking or heating *Spirulina*.**

Common problem or potential side effect after taking *Spirulina*:

- a. **Stomach ache** : If you have a sensitive stomach, try taking *Spirulina* after your meal.
- b. **Diarrhea , fever or rash on skin**: this is quite common for a selection of new *Spirulina* user, if this is the case, drink more water. Your body should adjust to *Spirulina* in few days. And the symptom(s) should go away. Please note, *if you still have any problem(s) or side effects, please stop taking Spirulina for a few days.*
- c. **Constipation / Difficult to defecate**: *Drinking extra water will resolve this issue.*
- d. **Dark green or brown defecation**: *this is normal.* Do not worry!

Good vs Poor Quality Spirulina

While it is true that Spirulina has a long list of health benefits, potential buyers should remain wary as there are many low quality Spirulina products currently flooding the market.

As such, it is important to understand/recognise the difference between a good Spirulina product and a bad one before purchasing.

How to compare Spirulina

With so many brands on the market, how can I know which brand is the best?

You may find more than 10 brands on your current market shelves. No one else is commercially Licensed to produce Spirulina in Australia solely except for us. All the other companies import the powder or tablets and merely pack the product in Australia. Some of the companies have no facilities, and even get others to pack for them (e.g. Pan Pharmaceuticals). Because they are not in production themselves, it is difficult to control the quality of their products.



Our company has been producing only Spirulina for more than 20 years, and we are experts in this field. From the Spirulina culture to the final product we do everything ourselves at our site thereby ensuring full control over the quality of our product.

Why is Australian Spirulina darker and more friable than other brands?

Normally a manufacturer will add filler, binder or starch to keep the tablet firm and smooth.

Our company insists that our health products should never be mixed with any unhealthy ingredients for whatever reason. We use a low speed cool press system and increase the press pressure to keep the tablet as firm as possible, and our tablets are not the same as binder added products.



Because our product (*pictured above*) is made from 100% pure Spirulina, Australian Spirulina's tablet is friable and darker than others. Without the binder, Spirulina is more rapidly assimilated by the body. Remember, your \$ is for Spirulina, not binder.

Understand where your Spirulina comes from

Aside from looking at the tablets themselves, a good indicator of Spirulina's quality is its country of origin.

There are currently hundreds of Spirulina products on the market. Nowadays everyone is promoting their Spirulina as

either “Made in Australia”, or “Australian Certified Organic”. Behind the scenes however, no one is willing to tell you, where exactly did their Spirulina come from? China and India produce about 70% of the world’s Spirulina, but you may be curious as to why you rarely see any Chinese or Indian brands on the market. This is because they are all dressed behind shiny labels which advertise them as “Made in Australia” or “Made in New Zealand” etc.

Many Spirulina products advertise themselves as made in Australia or Australian Certified Organic, but the truth is that they are made by repackaging 100% imported ingredients. They actually contain 0% Australian ingredients.

Factors affecting the quality of Spirulina

Of the factors which affect the quality of Spirulina, the most important are without a doubt the **growth conditions** and the **drying method**. These are the points you really want to pay specific attention to when choosing your product.

How and where is your Spirulina grown?

Commercial Spirulina is grown in an open air system (As seen in image below), most likely in shallow ponds. As the product is grown in an open area, the surrounding air, water and background pollution are all important factors that we take into account.



Think of the Spirulina as a fresh, clean sponge. If you place it into a pool of dirty, muddy water, what's going to happen? It is extremely easy for pollution from any of the sources mentioned above to potentially accumulate within the Spirulina growing system and be absorbed by the Spirulina itself. This results in a high concentration of heavy metals and a build-up of unwanted chemicals within the final product.

China and India produce and supply a very high percentage of Spirulina to the market worldwide. As you may already be aware, these locations have **higher than normal** levels of pollution, and also severely lack any **quality control** and **auditing** by local authorities. Thus Spirulina products sourced from these areas should generally be avoided as usually have high readings of heavy metals and contamination. Remember, products that are labelled "Made in Australia" can still be made from 100% imported ingredients. Try to look the label "Product of Australia" which means that all ingredients used are 100% Australian.

How is your Spirulina processed and dried?

Spray dried Spirulina vs Non Spray dried Spirulina

Spirulina comes with a wide range of nutrients such as Protein, Minerals, Carbohydrates, Vitamins, Enzymes etc.

When Spirulina is initially harvested from our growing system, it looks like a clump of dark green jelly (*seen on the right*). At this point the harvested Spirulina is actually about 90% moisture! We then extract all of the moisture to turn the Spirulina into a dry powder for storage.



The best way to dry Spirulina is by using a spray drying system. A good spray drying system can dry the Spirulina and remove that 90% moisture in just less than 10 seconds! All while minimising the nutrients lost. Spray dried Spirulina powder is very smooth and fine, just like a fine flour, but dark green.

During Spray drying, Spirulina is processed in a fully enclosed drying chamber, without contact by hand until the finished product.



A spray drying system which our company uses, is the best way to dehydrate Spirulina, however, this cutting edge system costs about \$1~2 million USD, the small producers in China or India will not be able to afford this kind of investment.

Of the cheapest ways to dry Spirulina, there are two that are most commonly used. The first one is sun drying and the other one is through the use of a heating element. These methods however take a long time, which in most cases, usually amounts to over 10 hours. After drying, the Spirulina will look like a sheet of thick paper; this is then sent to the miller to be ground into fine powder. Doing it this way is cheap, however as the Spirulina took a long time to dry, it is also exposed to more air and heat than necessary. This in turn leads to a large amount of the original nutrients being lost, as well as causing potentially more contamination during the drying process.

After the non spray dried Spirulina has been ground into a powder, you will notice that the powder is still coarse. It's not like fine dried flour, but like damp flour, which still contains a high amount of moisture. A high moisture level in Spirulina

makes it much easier for the product to spoil, as well as massively reducing storage time.

A very high percentage of products from China or India are not spray dried. Sure, it looks similar, but you end up paying for a product that has lost a majority of its natural goodness.

This means that a single one of our tablets, contains the significantly higher nutritional value compared to a same size tablet created from other drying methods.

In Summary

Try to avoid buying low quality Spirulina if possible, as frequent consumption of low quality Spirulina can lead to some long term health issues. Pay attention to their labels, especially the new Country of Origin labels which become mandatory after 1 July, 2018. Remember, Made in Australia ≠ Made using Australian Ingredients.



Country of Origin Food Labels

Mandatory labels

'Made in' country of origin claims



'Grown in' country of origin claims



'Packed in' statements



Providing additional information

Companies will be encouraged to provide information on the origin of significant ingredients where possible



Organic Claims

It is impossible to grow Spirulina fully organically while making it suitable for human consumption.

You may see lots of Spirulina products claiming themselves to be “Certified Organic Spirulina” however this is very deceiving to the average consumer. Most of these companies that claim to be “Certified Organic”, none are actually even Spirulina growers themselves. They are simply “Handlers”. Most of these companies use either a Chinese or Indian certificate, which can then be converted to other countries “Certified Organic”. In fact, if you see any Spirulina product claim that they are “Certified Organic” then they are straight up telling you that they source their Spirulina from China or India.

In order for it to be qualified as organic, the feed given to the Spirulina must be completely organic itself. Using non-purified animal manure or other similar sources of feed will result in an unsafe final product. This is due to the fact that all nearby contamination is easily absorbed and concentrated in the Spirulina itself. As such, this type of “Organic” Spirulina is unfit for human consumption.

Please be wary of companies that attempt to pull the wool over your eyes, and sell you a product that’s not what it claims to be.

To see full details about dodgy “Organic Spirulina” along with what the ACO has to say about it, follow the link [here](#).

Our Spirulina vs The World

Al-Dhabi (2013) from King Saud University carried out a research published on Saudi Journal of Biological Sciences on Oct 2013. The article was titled:

"Heavy metal analysis in commercial Spirulina products for human consumption" (Al-Dhabi, 2013).

This study shows and compares the high concentrations of six typical heavy metals/minerals (Nickel, Zinc, Mercury, Platinum, Magnesium and Manganese) in 25 Spirulina products commercialized worldwide.

The results indicated that Australian Spirulina (TAAU Australia) was the most pure Spirulina on the market.

The report was published on:

[Saudi Journal of Biological Sciences Volume 20, Issue 4 October 2013, Pages 383–388 \(click for link\)](#)

Summary of Journal paper

Table 1:

List of Spirulina products and their country of origin

Code Number	Product type	Manufacturing company	Country of Origin
S1	Tablets	TAAU Australia Pvt Ltd, NT	Australia
S2	Capsules	General Nutrition Corp, Pittsburgh	USA
S3	Capsules	Nature's Way Products, Inc, Springville, Utah	USA
S4	Tablets	Good 'N Natural, New York	USA
S5	Tablets	Now Foods, Bloomingdale	USA
S6	Tablets	Nature Pure, Inc., Larkspur, California	USA
S7	Tablets	Source Naturals, Inc, Santa Cruz, California	USA
S8	Tablets	Jarrow Formulas, Los Angeles, CA	USA
S9	Tablets	Earthrise Nutritionals LLC, Irvine, CA	USA
S10	Tablets	Nutrex Hawaii Inc, Kailua-Kona, Hawaii	USA
S11	Capsules	Pure Planet Products, Inc., Long Beach, CA	USA
S12	Tablets	Puritan's Pride, Inc., Oakdale, New York	USA
S13	Capsules	21st Century HealthCare, Inc., Arizona	USA
S14	Tablets	Japan Algae Co., Ltd., Tokyo	Japan
S15	Tablets	All Seasons Health, Hampshire	United Kingdom
S16	Capsules	Fushi Wellbeing Ltd., London	United Kingdom
S17	Tablets	Biovea, London	United Kingdom
S18	Capsules	Parry Nutraceuticals, Chennai	India
S19	Tablets	Lifestream International Ltd, Northcote, Auckland	New Zealand
S20	Tablets	Green Health, Auckland	New Zealand
S21	Tablets	RBC Life Sciences, Inc., Burnaby, British Columbia (BC)	Canada
S22	Tablets	Swiss Herbal Remedies Ltd., Richmond Hill, Ontario	Canada
S23	Capsules	Herbal Select, Guelph, Ontario	Canada
S24	Capsules	Gourmet Nutrition F.B. Inc., STE-Julie (Quebec)	Canada
S25	Capsules	Terra Vita Fine Whole Herbs, Brampton, Ontario	Canada

Of the samples collected, 12 were from the USA, 1 from Japan, 3 from UK, 1 from India and 5 from Canada. You may be wondering "why is TAAU the only sample from Australia?" That is because TAAU is the **ONLY** Spirulina grower in Australia. Other products simply claim to be Australian made. (simply importers, some called handler as they are described in our segment on Ambiguous Australian Certified Organic.)

While other Australian Brands rave about their Spirulina product being

"Australian made" or "Australian Certified Organic"

But they never admit their Spirulina is not even grown in Australia. The fact is that their Spirulina is **100% imported** from other countries.

Table 2:
Heavy metal concentration in Spirulina samples

Table 2 Heavy metal concentration in <i>Spirulina</i> samples.						
Spirulina samples	Heavy metal mg/kg d.w.					
	Ni	Zn	Hg	Pt	Mg	Mn
S1 TAAU Australian Spirulina	0.211	0.533	0.002	0.001	0.002	0.076
S2	4.672	5.627	0.028	0.01	0.03	0.587
S3	2.016	2.397	0.017	0.008	0.018	0.603
S4	2.147	1.628	0.02	0.011	0.026	0.436
S5	2.199	1.235	0.017	0.008	0.014	1.17
S6	3.726	6.225	0.022	0.009	0.028	0.007
S7	2.601	2.817	0.018	0.011	0.028	0.007
S8	3.577	1.871	0.023	0.012	0.031	0.309
S9	3.519	3.267	0.021	0.011	0.03	0.008
S10	2.442	2.041	0.017	0.008	0.021	0.137
S11	3.785	3.007	0.019	0.008	0.028	0.008
S12	3.597	2.859	0.019	0.008	0.024	0.006
S13	2.857	2.901	0.019	0.008	0.026	1.643
S14	2.852	2.114	0.026	0.008	0.042	0.011
S15	2.437	1.568	0.02	0.008	0.028	0.008
S16	2.712	2.434	0.019	0.009	0.033	1.777
S17	2.948	2.513	0.021	0.009	0.028	1.8
S18	2.633	1.876	0.016	0.009	0.023	1.328
S19	3.731	3.184	0.017	0.009	0.036	2.248
S20	2.225	1.548	0.008	0.009	0.019	1.132
S21	1.618	1.478	0.014	0.006	0.02	0.005
S22	1.589	4.626	0.016	0.007	0.023	0.009
S23	3.272	4.428	0.02	0.008	0.018	0.008
S24	3.558	3.733	0.017	0.009	0.034	1.433
S25	2.319	2.586	0.017	0.008	0.024	0.006

Ni : Nickel

The lowest was **S1 (TAAU) at 0.211 mg/kg**, highest was **S2 at 4.672 mg/kg**. It's more than **22 times** higher than our product. Other samples ranged between **1.618 mg/kg (S21)** to **3.577 mg/kg (S8)**, about **7.6 times** to **17 times** higher than our sample.

Zn : Zinc

Our sample **S1** was the **lowest** at **0.533** mg/kg, highest at **6.225** mg/kg (**S6**), which is about **12** times higher than ours.

Other samples ranged between **1.478** mg/kg (**S21**) to **5.627**mg/kg (**S2**), about **2.8** times to **10.6** times higher than our sample.

Hg : Mercury

Again, sample **S1** was the **lowest** at **0.002** mg/kg, highest was **0.028**mg/kg (**S2**), **14** times higher than our **S1** sample.

Other samples ranged between **0.016** mg/Kg (**S18**) to **0.026**mg/Kg. (**S14**) about **8** times to **13** times higher than our **S1** sample.

Pt : Platinum

TAAU's sample **S1** was again **lowest** at **0.001** mg/kg, highest was **0.012** mg/kg (**S8**); **12** times higher than our sample.

Other samples ranged between **0.006** mg/kg (**S21**) to **0.011**mg/kg (**S4,S7,S9**), about **6** times to **11** times higher than our **S1** sample.

Mg : Magnesium

No doubt, our **S1** was the **lowest** at **0.002** mg/kg; highest was **0.042**mg/kg (**S14**), **21** times higher than our sample **S1**.

Others samples ranged between **0.014** mg/kg (**S5**) to **0.036**mg/kg(**S19**) about **7** times to **18** times higher than Ours.

Mn : Manganese

TAAU S1 was at **0.076** mg/kg, highest was **2.248** mg/kg (S19). Almost **30** times higher than Our S1 sample.

Others ranged between **0.006** mg/kg (S25) to **1.777** mg/kg (S16).

Table 3 :
Graphical effect of heavy metal concentration

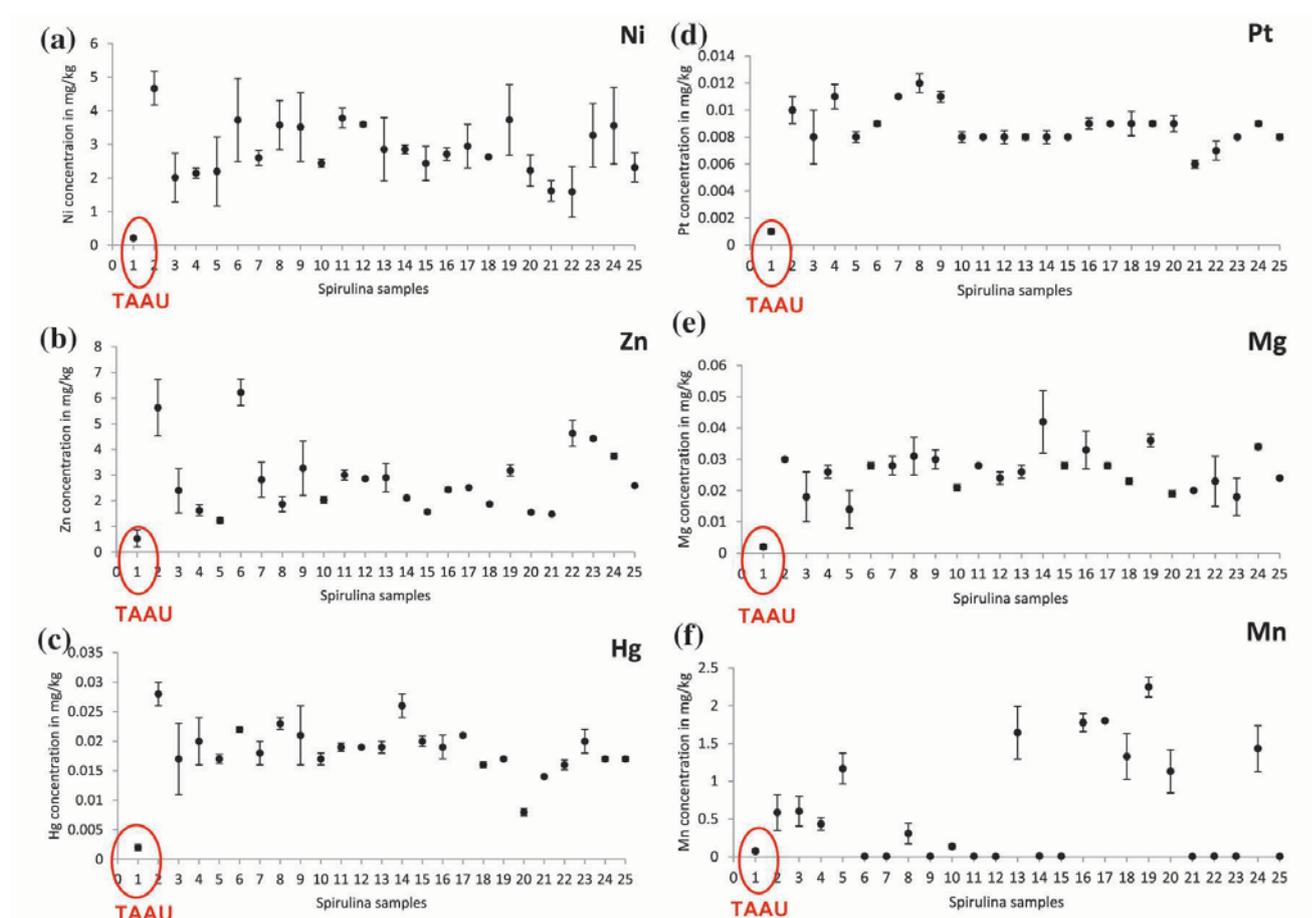


Figure 1 (a-f) Graphical effect of heavy metal concentration in commercially available *Spirulina* products. 1–25 – product code shown in Table 1.

[Complete Journal PDF download \(click to download\)](#)

At Australian Spirulina, we pride ourselves in our quality. From this journal article, it is evident that our Spirulina is of the finest quality in the world.

While other Spirulina companies promote how great their products are and that they are "Certified Organic", they never state where the Spirulina is grown.

It is also important to note that 3 samples were reported from the UK. As we understand, Spirulina cannot grow in the UK due to the colder climate and therefore must import the products from other more tropical countries (most likely from China, India, Thailand, etc).

Canada, Japan, New Zealand are also not suitable for Spirulina production due to their low temperatures and weather. There is no doubt that these products are imported from other countries.

Spirulina requires tropical weather and a pollution free environment, which ensures its purity and sustainability.

Not all Spirulina manufactured are of the same quality. Budget options are available but are of much lower quality from China and India, flooding the market. These products are often masked and labelled in other countries as their own during packaging (such as Made in USA, United Kingdom, Australia, or New Zealand, etc). Often customers are not aware that some countries do not produce Spirulina at all.

Good quality Spirulina is never cheap. Being aware of how your Spirulina is grown and where it comes from is more important than chasing after "Organic" certificates.